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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/283,585	04/01/1999	LARS ARKNAES-PEDERSEN	103176	1234
25944	7590	06/16/2004	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			LEE, PING	
			ART UNIT	PAPER NUMBER
			2644	

DATE MAILED: 06/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/283,585

Applicant(s)

ARKNAES-PEDERSEN, LARS

Examiner

Ping Lee

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

1. The changes to p. 5 of the specification have not been entered because the corrected line number is not identifying them.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-29 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

After reviewing the specification as originally filed, the newly added limitations in claims 1, 15 and 29 introduce new matter. Specifically, the phrase in claim 1, "processing the auscultation signal to reduce the duration time of each signal segment" is not supported by the original disclosure. It is noticed that a high pass pre-filter (35) would be used if a segment has duration greater than 35 ms. If no segment has a duration greater than 35 ms, the claimed limitation "reducing the duration time of each signal segment" is mooted. Since the input is an auscultation signal, not all signal segment will be more than 50 ms. If there is a segment having a duration greater than

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35 ms, a high pass pre-filter would be used to filtered out (eliminate) the lower frequency components. This action does not read on "reducing the duration time of each signal segment". Only that particular segment, not each signal segment, will be processed and to have an output with duration less than 35 ms. As shown in Figs. 3a-3e, the action will ensure that each new segment after filtering will have a duration less than 35 ms.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-4, 7-9, 15-18, 21-23 and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Don Michael et al (US 5,971,936).

In view of 112, 1<sup>st</sup> paragraph rejection, the claims are rejected based on broadest interpretation.

Regarding claims 1, 4, 15, 18 and 29, Don Michael et al (hereafter Don Michael) disclose a method of and an apparatus for processing an auscultation signal comprising at least one input transducer (although not clearly shown in Fig. 3, it is inherently included to produce "HEARTBEAT SOUND PATTERN SIGNAL"), at least one output

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transducer (e.g. 50), and a signal processing unit (28,30,36,32) which processing the auscultation signal to reduce the duration time of a signal segment (Table 1 shows that the duration of the segment 15, for example, is reduced) such that the duration of time of substantially all of the signal segments is less than a limit of 40 ms (each segment as shown in Fig. 2 is less than 50 ms). At least one signal segment is repeated at least once in the output signal (abstract). Since each segment is less than 50 ms, the echo perception is inherently reduced from the auscultation signal.

Regarding claims 2, 3, 7, 16, 17 and 21, Don Michael shows the iteratively filtering ("1<sup>st</sup> pass". "2<sup>nd</sup> pass").

Regarding claims 8 and 22, Don Michael shows the coherent signal has at least three zero-crossings (a single heartbeat has least three zero-crossings as shown in Fig. 2) and the coherent signal is being repeated at least once (col. 11, lines 1-8).

Regarding claims 9 and 23, Don Michael shows dividing the signal segments in zero crossings (col. 4, lines 11-12).

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 4, 8-15, 18, and 22-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Katz (US 4,528,689).

Regarding claims 1, 4, 15, 18 and 29, Katz disclose a method of and an apparatus for processing an auscultation signal comprising at least one input transducer

(120), at least one output transducer (116), and a signal processing unit (the rest of the elements in Fig. 6) which establishes each signal segment such that the duration of time of substantially all of the signal segments is less than a limit of 40 ms (each segment represented by a sampled signal sampled at 2 kHz; col. 7, line 58). At least one signal segment is repeated at least once in the output signal (Fig. 8).

Regarding claims 8 and 22, Katz shows the coherent signal has at least three zero-crossings (Fig. 8) and the coherent signal is being repeated at least once.

Regarding claims 9 and 23, Katz shows dividing the signal segments in zero crossings (132).

Regarding claim 10, 11, 24 and 25, Katz shows the window function (col. 8, lines 24-52) and the neighboring signal segments being level-compensated.

Regarding claims 12, 13, 26 and 27, Katz shows the reverse and the mirror (Fig. 8).

Regarding claims 14 and 28, Katz shows the high-pass filter (126).

### ***Response to Arguments***

8. Applicant's arguments with respect to claims 1, 15 and 29 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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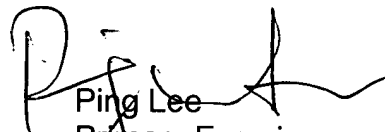
§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ping Lee whose telephone number is 703-305-4865. The examiner can normally be reached on Monday and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W Isen can be reached on 703-305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4750.

  
Ping Lee  
Primary Examiner  
Art Unit 2644

pwl